

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P902680

Luminaire Tested: DFN2DIP-HX3F0-090D070US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

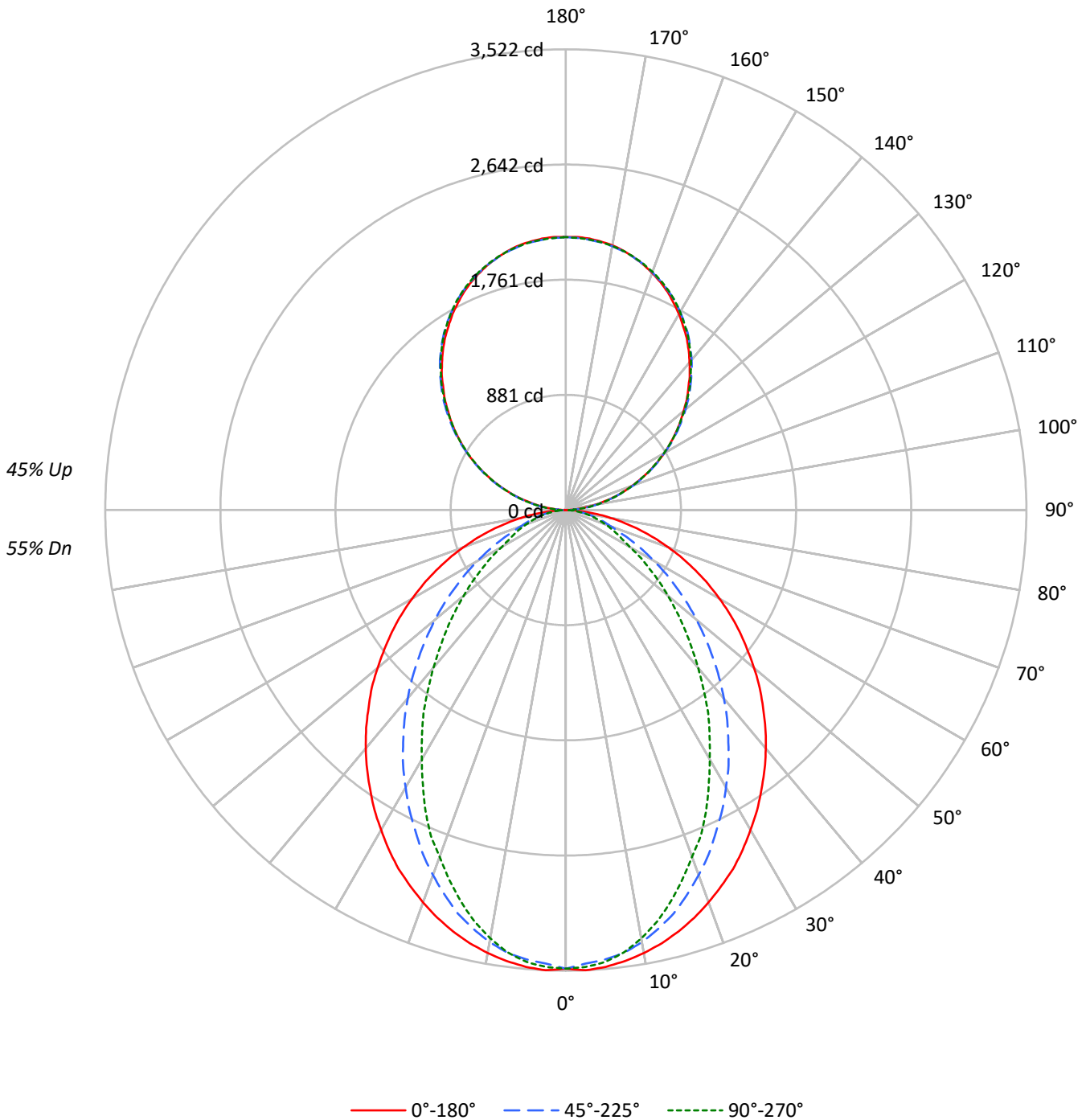
Test Method: LM-79-2019  
Report Number: P902680  
REPORT IS A COMBINATION OF REPORTS P899270 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-090D070US830-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13049.5 lumens  
Efficiency: N/A  
Efficacy: 89.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 146.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				20				20				20				20			
RC	80				70				50				30				10		0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61	55		
1	99	95	92	88	92	89	86	83	76	74	72	65	63	62	55	54	53	48		
2	91	84	78	73	84	78	73	69	68	64	60	58	55	53	49	47	45	41		
3	83	74	67	61	77	69	63	58	60	55	51	52	48	45	44	41	39	35		
4	77	66	58	52	71	62	55	50	54	49	44	46	42	39	39	36	34	31		
5	71	59	51	45	65	55	48	43	48	43	39	42	38	34	36	33	30	27		
6	65	53	45	40	60	50	43	38	44	38	34	38	34	30	33	29	27	24		
7	60	48	41	35	56	45	38	33	40	34	30	35	30	27	30	27	24	21		
8	56	44	36	31	52	41	35	30	37	31	27	32	28	24	28	24	22	19		
9	52	40	33	28	49	38	31	27	34	28	24	30	25	22	26	22	20	18		
10	49	37	30	25	46	35	29	24	31	26	22	27	23	20	24	20	18	16		

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	4061	4061	4061
5°	4066	3994	4020
10°	4024	3913	3887
15°	3966	3781	3683
20°	3891	3600	3433
25°	3815	3397	3192
30°	3712	3190	2886
35°	3611	2968	2618
40°	3508	2738	2311
45°	3389	2483	2033
50°	3266	2227	1762
55°	3137	1952	1501
60°	2988	1667	1233
65°	2816	1376	1107
70°	2608	1105	999
75°	2345	968	904
80°	1966	803	777
85°	1343	522	570

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3389 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	328.6	2.5
10°-20°	902.0	6.9
20°-30°	1266.4	9.7
30°-40°	1380.5	10.6
40°-50°	1268.8	9.7
50°-60°	996.5	7.6
60°-70°	648.6	5.0
70°-80°	333.9	2.6
80°-90°	91.2	0.7
90°-100°	129.1	1.0
100°-110°	410.3	3.1
110°-120°	702.1	5.4
120°-130°	923.3	7.1
130°-140°	1036.4	7.9
140°-150°	1016.3	7.8
150°-160°	852.6	6.5
160°-170°	565.4	4.3
170°-180°	197.6	1.5
0°-30°	2497.0	19.1
0°-40°	3877.5	29.7
0°-60°	6142.8	47.1
0°-90°	7216.4	55.3
90°-120°	1241.5	9.5
90°-150°	4217.6	32.3
90°-180°	5833.0	44.7
0°-180°	13049.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3506	3506	3506	3506	3506	
5°	3506	3490	3449	3477	3468	332
15°	3335	3300	3192	3132	3100	940
25°	3027	2925	2716	2586	2538	1392
35°	2608	2446	2167	1967	1897	1632
45°	2132	1920	1586	1361	1285	1647
55°	1621	1374	1031	841	781	1449
65°	1095	838	552	444	435	1085
75°	584	362	254	232	229	617
85°	136	70	60	60	60	156
90°	2	23	62	58	60	13
95°	92	109	113	113	109	102
105°	379	384	388	391	391	400
115°	705	715	712	710	705	697
125°	1025	1040	1036	1030	1028	916
135°	1326	1345	1349	1347	1342	1025
145°	1609	1622	1632	1634	1627	1005
155°	1840	1845	1851	1860	1854	847
165°	2002	2000	2000	2012	2004	565
175°	2083	2078	2074	2087	2076	198
180°	2087	2087	2087	2087	2087	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3506.0	3506.0	3506.0	3506.0	3506.0
2.5°	3521.8	3506.0	3470.9	3503.0	3496.5
5°	3506.0	3490.1	3448.8	3477.3	3467.9
7.5°	3477.3	3458.5	3414.1	3426.5	3410.7
10°	3439.3	3417.1	3353.8	3344.0	3325.2
12.5°	3391.8	3363.3	3277.4	3258.6	3223.5
15°	3334.6	3299.7	3191.9	3131.6	3100.0
17.5°	3268.0	3217.2	3083.8	3014.2	2963.4
20°	3191.9	3128.3	2969.7	2890.6	2820.6
22.5°	3109.4	3036.4	2852.2	2744.5	2697.1
25°	3027.0	2925.3	2715.9	2586.0	2538.2
27.5°	2928.7	2820.6	2589.0	2439.9	2366.8
30°	2824.0	2703.1	2449.3	2287.7	2201.9
32.5°	2722.3	2576.2	2316.3	2125.8	2046.4
35°	2608.2	2446.3	2167.2	1967.3	1897.2
37.5°	2497.1	2322.4	2027.5	1808.4	1729.3
40°	2379.6	2189.4	1881.4	1656.2	1573.8
42.5°	2259.1	2056.2	1735.6	1500.7	1421.5
45°	2132.2	1919.5	1586.5	1360.9	1284.9
47.5°	2011.7	1786.5	1443.8	1218.2	1148.6
50°	1878.4	1653.1	1304.1	1085.0	1018.6
52.5°	1748.1	1510.1	1170.8	961.4	901.2
55°	1621.2	1373.8	1031.0	840.9	780.6
57.5°	1491.3	1237.5	907.6	729.8	679.0
60°	1357.9	1104.1	777.3	615.7	564.9
62.5°	1228.0	974.2	666.2	514.1	488.8
65°	1094.7	837.5	552.0	444.3	434.6
67.5°	967.8	710.6	444.3	390.1	380.7
70°	834.5	587.1	368.0	336.3	323.5
72.5°	707.6	472.6	307.6	282.4	276.1
75°	583.7	361.6	253.8	231.6	228.6
77.5°	460.1	256.8	199.9	187.2	180.8
80°	345.7	184.2	152.1	139.7	139.7
82.5°	241.0	123.9	104.7	98.3	98.3
85°	136.3	69.7	60.2	60.2	60.2
87.5°	50.8	25.3	25.3	22.2	22.2
90°	1.9	22.6	61.6	57.9	59.8
92.5°	39.0	52.9	54.8	56.6	56.6
95°	91.8	109.4	112.6	112.6	109.4
97.5°	152.9	169.2	176.2	176.2	176.2
100°	223.3	237.8	242.8	242.8	240.9
102.5°	297.6	308.2	315.2	317.1	315.2
105°	378.7	383.7	387.5	390.7	390.7
107.5°	459.2	466.7	466.7	468.1	459.2
110°	537.2	547.3	547.3	547.3	542.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	621.5	632.3	630.4	625.3	621.5
115°	704.6	714.6	711.5	709.6	704.6
117.5°	786.9	800.8	792.0	786.9	781.9
120°	870.0	883.8	870.0	870.0	864.3
122.5°	945.5	963.1	954.3	949.2	945.5
125°	1024.7	1040.5	1035.5	1029.8	1027.9
127.5°	1102.1	1121.6	1114.7	1107.2	1102.1
130°	1174.5	1197.1	1194.0	1190.2	1183.3
132.5°	1255.7	1273.3	1274.5	1265.7	1260.7
135°	1325.5	1344.9	1348.8	1346.8	1341.8
137.5°	1403.4	1419.2	1422.3	1421.1	1413.5
140°	1472.1	1487.8	1496.6	1496.6	1489.7
142.5°	1542.5	1558.2	1563.2	1565.1	1558.2
145°	1609.2	1621.7	1631.8	1633.7	1626.8
147.5°	1669.0	1684.7	1692.2	1695.4	1688.5
150°	1730.6	1741.3	1748.2	1753.9	1748.2
152.5°	1785.3	1796.0	1804.8	1811.8	1804.8
155°	1840.0	1845.0	1850.8	1859.5	1853.9
157.5°	1887.3	1891.0	1894.1	1906.8	1897.9
160°	1929.4	1933.2	1935.0	1945.7	1938.1
162.5°	1968.4	1968.4	1970.3	1982.2	1973.4
165°	2001.7	1999.8	1999.8	2012.4	2003.6
167.5°	2031.9	2026.3	2026.3	2038.8	2030.0
170°	2054.6	2049.6	2047.7	2060.2	2049.6
172.5°	2070.3	2065.2	2063.3	2075.9	2065.2
175°	2082.8	2077.8	2074.1	2086.6	2075.9
177.5°	2089.8	2084.7	2080.9	2091.7	2080.9
180°	2086.6	2086.6	2086.6	2086.6	2086.6



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**CIE UGR TABLE:**

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	12.45	13.33	13.37	14.26	15.46	8.43	9.30	9.35	10.24	11.43
	3H	14.13	14.91	15.06	15.85	17.07	9.62	10.40	10.55	11.34	12.56
	4H	14.73	15.47	15.68	16.42	17.65	10.07	10.81	11.01	11.75	12.98
	6H	15.15	15.83	16.10	16.78	18.02	10.39	11.07	11.34	12.02	13.26
	8H	15.27	15.92	16.24	16.89	18.13	10.48	11.12	11.44	12.09	13.33
	12H	15.33	15.95	16.30	16.91	18.18	10.52	11.13	11.49	12.10	13.36
4H	2H	12.48	13.22	13.43	14.16	15.39	9.03	9.77	9.98	10.71	11.94
	3H	14.30	14.91	15.26	15.89	17.13	10.37	10.99	11.33	11.96	13.21
	4H	14.99	15.55	15.96	16.52	17.79	10.92	11.48	11.89	12.45	13.72
	6H	15.50	15.98	16.48	16.97	18.24	11.34	11.82	12.32	12.81	14.08
	8H	15.67	16.12	16.65	17.11	18.39	11.46	11.91	12.45	12.90	14.18
	12H	15.76	16.17	16.76	17.17	18.46	11.53	11.93	12.53	12.94	14.22
8H	4H	14.96	15.41	15.94	16.39	17.68	11.20	11.65	12.18	12.64	13.92
	6H	15.52	15.89	16.52	16.92	18.20	11.71	12.08	12.72	13.11	14.39
	8H	15.73	16.06	16.75	17.07	18.37	11.90	12.23	12.92	13.24	14.54
	12H	15.86	16.15	16.88	17.16	18.51	12.02	12.31	13.04	13.32	14.66
12H	4H	14.91	15.32	15.91	16.32	17.61	11.21	11.61	12.21	12.61	13.90
	6H	15.49	15.82	16.51	16.84	18.13	11.76	12.09	12.78	13.10	14.40
	8H	15.71	16.00	16.73	17.01	18.35	11.97	12.26	12.99	13.27	14.61